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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/002,485	12/31/97	LAL	P PF-0459US

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EXAMINER	
SAOUD,C	
ART UNIT	**PAPER NUMBER**
1647	15

DATE MAILED: 12/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/002,485	LAL et al.
Examiner	**Group Art Unit**
Christine Saoud	1647

☒ Responsive to communication(s) filed on *Sep 15, 2000*.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1, 15-18, and 22-39* is/are pending in the application.

Of the above, claim(s) *1, 15-18, 22, 23, 28, and 34-39* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *24-27 and 29-33* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *13*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Response to Amendment

1. Claims 2-14 and 19-21 have been canceled, claims 1 and 15-18 have been amended, and claims 24-39 have been added as requested in the amendment of paper #14, filed 15 September 2000. Claims 1, 15-18, and 22-39 are pending in the instant application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Any objection or rejection of record which is not expressly repeated in this action has been overcome by Applicant's response and withdrawn.

4. Applicant's arguments filed 15 September 2000 have been fully considered but they are not deemed to be persuasive.

Election/Restriction

5. Applicant elected Group II with traverse in Paper #10. The claims corresponding to the elected Group are claims 24-27 and 29-33. Claims 1, 15-18, 22-23, 28 and 34-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected

invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10 and the restriction was made final in paper #12.

Applicant has provided arguments regarding the original restriction requirement in stating that "Applicants submit that the requirement to elect between the multiple polypeptides of the instant application was improper and Applicants have amended the claims to remedy this oversight". This argument is not persuasive because the restriction was proper was made final in paper #12. If Applicant still disagrees with the restriction, then Applicant should take other appropriate action (37 CFR 1.144). See MPEP § 821.01.

Applicant indicates at page 8 of the Response that a "provisional election" is being made. Applicant should note that this is improper since an election was made in paper #10. If Applicant wishes to change their election, Applicant will need to refile the application in the form of a CPA or RCE application. Applicant's "offer to elect a reasonable number of sequences following allowance of portions of the claims" is premature in that no allowable subject matter has been indicated and because the restriction is deemed proper and made final in paper #12.

Applicant's arguments spanning pages 8-10 regarding the restriction requirement will not be addressed at this time because they were not timely filed. If Applicant still disagrees with the restriction, then Applicant should take other appropriate action (37 CFR 1.144). See MPEP § 821.01.

Specification

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention ***to which the claims are directed.***

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 24-27 and 29-33 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to an invention with no apparent or disclosed specific and substantial credible utility. The instant application has provided a description of an isolated DNA encoding a protein and the protein encoded thereby for the reasons of record as applied to original claims 2-14. The instant application does not disclose the biological role of this protein or its significance.

Applicant states at page 10 of the Response that the invention is directed to polynucleotides encoding SEQ ID NO:25 and "use of these sequences in the diagnosis, treatment and prevention of cancer and immunological disorders". This asserted utility would not be considered as a specific, substantial and credible utility to one of ordinary skill in the art at the time of the instant invention, absent evidence to the contrary, because the record fails to correlate the claimed invention with cancer or immunological disorders. Applicant asserts that Northern analysis shows expression in gastrointestinal, developmental, hematopoietic and immunological

cDNA libraries. However, this information fails to correlate the claimed invention with any cancer or immunological disorder and without a nexus between the claimed invention and cancer or immunological disorders, one of ordinary skill in the art would not believe that the claimed invention could be used for diagnosis, treatment or prevention of any condition with which it is not related. Therefore, the assertion of use in the diagnosis, treatment and prevention of cancer and immunological disorders is not a credible utility.

At page 11 of the Response, Applicant indicates that the protein encoded by the claimed polynucleotide has 28% sequence identity to mouse beta chemokine. However, this degree of protein similarity does not support a specific, substantial and credible utility for the claimed invention because one of ordinary skill in the art at the time of the invention would not reasonably conclude that the claimed polynucleotide would encode a protein with the same biological activity as the mouse beta chemokine because of the low degree of amino acid sequence identity.

Applicant requests rejoinder of claims 34-39 at page 11 of the Response. However, this request is premature in that there is no indication of allowable claims.

At page 14 of the Response, Applicant asserts that the "rejection fails to demonstrate either that the Applicants' assertions of utility are legally insufficient or that a person of ordinary skill in the art would reasonably doubt that they could be achieved". Applicant's assertion is unfounded since reasoning and explanation were provided in paper #12.

Applicant argues at pages 14-17 that the claimed polynucleotides are useful as tools for toxicology testing, drug discovery, and the diagnosis of disease and that these uses are "well-

established". Each of these uses will be addressed individually, in that the facts and issues directed to each use are distinct and separable. First, Applicant argues that toxicology testing is a well-established utility, therefore, because the claimed polynucleotides could be used in this manner, the claimed invention possesses utility. Applicant is not incorrect in the conclusion that toxicology is a well-established use of polynucleotides and the polypeptides encoded. However, as indicated at page 7 of the Brief, all nucleic acids and genes are useful in toxicology testing. Therefore, this is a utility which is nonspecific and would apply to virtually every member of a general class of materials, such as proteins or DNA. While this may be a well-established use of polynucleotides, it is not a well-established, specific, substantial and credible utility of the claimed invention. Use of the claimed polynucleotide in an array for toxicology screening is only useful in the sense that the information that is gained from the array is dependent on the pattern derived from the array, and says nothing with regard to each individual member of the array. If the expression of Applicant's polynucleotide is affected by a test compound in an array for drug screening, what useful information has been gained?

Applicant urges that because a set of compounds has a utility as a group, that each member has utility as part of that set. This is analogous to arguing that protein of unknown function which is derived from a rat has utility because rats have utility and this protein is necessary to make a rat. If the claimed compound is only useful as part of a larger mixture of compounds, then it is the mixture, and not the individual compounds, which has utility. Further, a fingerprint is composed of a mixture or set of lines which, when taken together as a whole,

provide an identifying, useful, unique pattern. However, if each line is taken away from the whole, not each and every line has utility or provides useful information merely because it is part of the whole. The majority of the lines which make up a fingerprint are only useful in the context of the whole.

With regard to drug discovery and development, Applicant mentions expression profiling as one use of the claimed polynucleotide. At page 16 of the Response, Applicant states "expression profiling is useful for the elucidation of biochemical pathways, each pathway comprising a multitude of component polypeptides and thus providing a pool of potential drug targets". However, this would appear to be use of the claimed invention for further research or as a research tool, which is not a specific, substantial and credible utility which meets the requirements of 35 U.S.C. 101. If the skilled artisan does not know the biological significance of the polypeptide or nucleic acid which is being affected by the drug that is being tested, one cannot make a reasonable interpretation of whether the drug that is being tested is good, bad, effective, toxic, non-toxic, etc. If a drug targets the nucleic acid of the claimed invention, how is this information useful to the skilled artisan? For example, the expression of the claimed nucleic acid is abolished by a test compound; what does this mean?? Is this good or bad?? One does not know because one does not know the biological significance of the claimed invention. If the claimed nucleic acid inhibits cancer, then the test compound would not be a good choice in cancer therapy. If the claimed nucleic acid inhibits the immune system, then the test compound could be good or bad, depending on the disorder being treated. However, without some basic information

as to the significance of the claimed invention, any information obtained from expression profiling or drug screening is meaningless because increased or decreased expression alone does not provide information which can be processed in a meaningful manner.

With regard to diagnosis and/or treatment of disease, Applicant argues that there is no requirement that each and every gene have an established correlation with a particular disease (see page 17 of the Response). However, in order for a polynucleotide to be useful for diagnosis and/or of a disease, there must be some correlation or relationship between the claimed polynucleotide and a disease or disorder. Just the presence of a polynucleotide in tissue that is derived from cancer cells is not sufficient for establishing a utility of use in diagnosis and/or treatment of disease. First, there must be some expression pattern that is unique for the claimed polynucleotide that would make it diagnostic. Many proteins are expressed in a number of tissues, including normal tissues and diseased tissues. Therefore, one needs to know that the claimed polynucleotide is either present only in cancer tissue to the exclusion of normal tissue or is expressed in higher levels in diseased tissue compared to normal tissue (i.e. overexpression). Only such differential expression would serve as a basis for use of the claimed polynucleotide as a diagnostic for a disease. However, in the absence of any disclosed relationship between the claimed polynucleotide or the protein that is encoded thereby and any disease or disorder and the lack of any correlation between the claimed polynucleotide or the encoded protein with any known disease or disorder, any information obtained from an expression profile would only serve

as the basis for further research, which is not deemed to be a specific, substantial, and credible utility and the claims do not meet the requirement for utility under 101.

At page 18 of the Response, Applicant argues that "the patent applicant need not set forth the particular functionality of the claimed invention to satisfy the utility requirement" and that "[p]ractical, beneficial use, not functionality, is at the core of the utility requirement". However, this argument is not persuasive because the instant specification fails to provide a practical, beneficial utility which would satisfy the utility requirements of 35 U.S.C. 101 for the reasons provided above and in the previous Office action. Applicant argues that the claimed invention is "known" to be useful because it is expressed in humans and that one of ordinary skill in the art would know how to use it in toxicology testing, drug development and disease diagnosis. However, as stated previously, these asserted utilities are not specific, substantial and credible, and therefore, the claims do not meet the requirements of 35 U.S.C. 101. Applicant states that the "claimed invention could be used, for example, in a toxicology test to determine whether a drug or toxin causes any change in the expression of secreted proteins". Applicant is correct that the claimed invention could be used in this way, however, this is not a specific, substantial and credible utility because the information gained from this test has not meaning without knowledge of the significance of the claimed invention. If the expression goes up, what does this mean??? Absolutely nothing in the absence of some knowledge of the relevance of the claimed invention, absent evidence to the contrary. Applicant states that "the claimed invention could be used to determine whether a specific medical condition, such as cancer, affects the expression of signal

peptide-containing secreted proteins". Applicant is again correct that the claimed invention could be used in this manner, however, this is as the object of further research which is not a specific, substantial and credible utility. Applicant also asserts that the claimed invention could "serve as a marker for or to assess the stage of a particular disease or condition". While this asserted utility would be acceptable, in the absence of any correlation of the claimed invention with any disease or disorder for which it could search as a marker, this is not a credible utility since no disease or disorder has been disclosed for which the claimed invention could serve as a marker. It would appear that Applicant is describing a "wish to know" type of utility, which is not a specific, substantial and credible utility. Applicant continues to assert that knowledge of the specific functions of the encoded protein are not required for use of the polynucleotide in diagnosis of disease. This argument is not disputed, however, in order for the claimed invention to be useful for diagnosis of disease, there must be some correlation to a disease; again, it would appear that Applicant is describing a "wish to know" type of utility for the claimed invention, which is not a specific, substantial and credible utility.

At page 19 of the Response, Applicant argues that a utility may be specified even if it applies to a broad class of inventions. This argument is not incorrect, however, the utility must be specific, substantial and credible. None of the utilities which are identified by Applicant, i.e. toxicology testing, drug discovery, disease diagnosis and treatment, have been demonstrated to be specific, substantial and credible. One of ordinary skill in the art must understand how to achieve a practical benefit from knowledge of the class, however, there is no practical benefit from use of

the claimed invention in toxicology testing, etc. because the utility is not specific, substantial and credible. Applicant has not identified a general utility, which is specific, substantial and credible, which applies to the broad class of polypeptides or the broad class of polynucleotides of the claimed invention for the reasons of record.

Applicant argues at pages 19-20 of the Response that practical utility of an invention may be derived from belonging to a broad class of inventions. This statement is not entirely correct in that practical utility can be derived IF each and every member of the broad class possess (or would more likely than not) possess a common utility. Applicant's example of a fishing pole is a very good example of how an invention can derive utility by belonging to a broad class of inventions. However, at pages 20-21 of the Response, Applicant attempts to apply this reasoning to a number of different "classes" of proteins, which DO NOT have a common utility. Applicant states "[i]t is well-known to persons of ordinary skill in the art that there is no such thing as a useless interleukin" and "[b]ecause all the interleukins, as a class, convey practical benefit (much like the class of DNA ligases identified in the Training Materials), there is no need to provide additional information about them." These statements do not find a basis in fact. The interleukins are a family of proteins which have a diversity of biological actives, which are mediated by specific receptors for each of the interleukins. Not all members of the family could be used in the same manner; some of the members stimulate cells, some inhibit, some members are activated by one another, some are inhibited by one another. The members of the family share some amino acid sequence similarity, however, they have very distinct three dimensional structures which

accounts for them binding distinct receptors. Applicant has offered no evidence to support the assertion that all interleukins "convey practical benefit", and one of ordinary skill in the art would not agree that a common specific, substantial and credible utility is possessed by the family of interleukins, absent evidence to the contrary.

Applicant asserts that G protein-coupled receptors are another "example of a class that by itself conveys practical benefits". This assertion is not supported by any facts of record and one of ordinary skill in the art would disagree that belonging to this class of compounds conveys a specific, substantial and credible utility. Each receptor couples to a specific ligand, wherein binding to the receptor results in signal transduction. Without the knowledge of the natural ligand for the receptor or the biological significance of the receptor, one cannot use the receptor in a meaningful manner for drug screening, toxicology testing, or for disease diagnosis. Applicant's assertion that newly identified G protein-coupled receptors could be used as controls in toxicology screening is not considered a specific, substantial and credible utility in that it is a nonspecific utility that would apply to virtually every member of a general class of materials (see Utility Guidelines, Example 12).

Applicant again asserts that all polynucleotides and polypeptides can be used for toxicology testing and drug discovery (page 21, final paragraph). However, as stated previously, these uses are not specific, substantial and credible utilities.

Applicant asserts at page 22 of the Response that the use of the claimed invention for toxicology testing, drug discovery, and disease diagnosis are substantial utilities. However, it is

not doubted that these uses are not substantial, but rather that these uses fail to meet the requirement for utility because they are not specific, substantial and credible. Whereas the uses may be considered substantial, they are not specific and/or credible.

Applicant asserts at page 23 of the Response that there exists a market "for databases containing all expressed genes". However, this assertion fails to address the utility of the individually claimed polynucleotide of the invention of the instant application. The rejection of record says nothing to the patentability of a collection of polynucleotides in the form of a database. This issue was not addressed because the claims are not directed to this subject matter.

Applicant argues at page 24 of the Response that the Examiner failed to demonstrate that one of ordinary skill in the art would reasonably doubt the utility of the claimed invention. This argument is not persuasive because such evidence and scientific reasoning was presented in the grounds of rejection in paper #12. Applicant asserts at page 24 that "SEQ ID NO:102 is in fact a polynucleotide encoding a human signal peptide-containing protein, which is known to have a specific utility". This assertion is unfounded and finds no basis in fact. If all "human signal peptide-containing proteins" possessed a specific, substantial and credible common utility, then the claims would be allowable. However, the art does not recognize a common specific, substantial and credible utility for the claimed invention which is based on a common structure. The disclosure that the claimed invention is expressed in gastrointestinal, developmental, hematopoietic, and immunological cDNA libraries does not support a specific, substantial and

credible utility for the claimed invention, absent evidence to the contrary. Therefore, a prima facie case was properly set forth, contrary to Appellants' assertions.

At pages 25-27 of the Response, Applicant is questioning and challenging the Utility Guidelines and Training Materials of the USPTO. This does not appear to be an argument directed to the rejection of the claims, therefore, no comment will be made at this time. Applicant should feel free to contact the Solicitor's Office with regard to the legality of the Utility Guidelines and Training Materials of the USPTO.

9. Claims 24-27 and 29-33 are rejected under 35 U.S.C. §112, first paragraph, as failing to adequately teach how to use the instant invention for those reasons given above with regard to the rejection of these claims under 35 U.S.C. §101 and for the reasons of record as applied to original claims 2-14.

Conclusion

10. No claim is allowed.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Saoud, Ph.D., whose telephone number is (703) 305-7519. The examiner can normally be reached on Monday to Friday from 7AM to 3PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz, can be reached on (703) 308-4623.

Certain papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1 (CM1). NOTE: If Applicant *does* submit a paper by fax, the original signed copy should be retained by Applicant or Applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers.

Official papers filed by fax should be directed to (703) 308-4556. If this number is out of service, please call the Group receptionist for an alternate number. Faxed draft or informal communications with the examiner should be directed to (703) 308-0294. Official papers should NOT be faxed to 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

December 4, 2000

CHRISTINE J. SAOUD
PRIMARY EXAMINER

Christine J. Saoud